Central Valley Salmon Workshop

Randall Brown

The Interagency Program's Central Valley Salmon Team convened a 2-day workshop in mid-September to review juvenile salmon monitoring efforts in the estuary and the watershed. The agenda also included a discussion of a salmon model being developed Wim Kimmerer and others with funding from the Central Valley Project Improvement Act. About 40 biologists representing state and federal fish and wildlife agencies and private consultants attended, and most of the attendees made presentations on their individual programs. The principal workshop objective was to increase communication and coordination among the biologists working on Central Valley chinook salmon (and steelhead) runs.

Speakers at the workshop are providing abstracts of their presentations for compilation into a workshop summary, which will be available after October 21 from Lisa Batiste (916/227-7541; lbatiste@water.ca.gov).

A couple of points from the workshop presentations and panel discussion may be of general interest — one involving coordination/communication and the second about data/information. With regard to coordination and communication, it has long been evident that there is not enough of either in monitoring and special studies related to Central Valley salmon. With the concurrence of DFG management, the Interagency Ecological Program recently established the Central Valley Salmon Team to help achieve coordination through more of a life history approach to salmon studies; that is, follow the fish from the spawning grounds through the estuary and the ocean and back to the natal streams. Individual studies may continue to focus on individual life history components (emigration from the American River, for example); the team will endeavor to ensure that information about all the components is adequate to yield a coherent picture of the entire life history.

The Central Valley Salmon Team is led by Alan Baracco (DFG) and includes Jim Smith (USFWS), Marty Kjelson (USFWS), Gary Stern (NMFS), Ken Lentz (USBR), and Randy Brown (DWR). The team will meet at about monthly intervals (at least for the first year) and has or will establish issue-specific, working-level groups for geographic areas (*eg*, upper Sacramento River), races (*eg*, spring and winter run groups), or technical issues (*eg*, use of DNA to identify races). The team will also sponsor or encourage technical workshops as needed to foster communication (such as the annual workshop described here) and to address tough questions. Two workshops now being considered deal with the importance of estuarine rearing to Central Valley salmon stocks (tentatively scheduled for early December) and methods of estimating spawning escapement. The team will also sponsor semi-technical meetings for stakeholders and managers.

A second major area of concern identified at the meeting deals with the generally low rate at which salmon data are being converted to information. An ancillary problem is that most Central Valley salmon studies are designed strictly to index the abundance of a particular life stage — not to address cause-and-effect questions. The problem is the result of a combination of many factors, including lack of funding, lack of consistent electronic data storage and retrieval capabilities, emphasis on races of commercial importance (*ie*, fall chinook), and the lack of time (and agency encouragement) to publish interpretive reports in the open literature. One goal of the new Central Valley Salmon Team is to overcome many of the past obstacles that have hindered conversion of data to information useful to salmon biologists and managers.

There are many positive signs indicating that the goal of more effective information collection and dissemination can be achieved. The Central Valley Project Improvement Act (including the Comprehensive Analysis and Monitoring component), the CALFED process (including Category III), and increased stakeholder involvement will result in more funding for well-designed studies. The Interagency Program's relational data management system located on the WorldWideWeb can greatly assist in making the salmon and ancillary data available in a useful format. The CVPIA's salmon modeling program can help researchers focus their studies on issues critical to management. Finally, Central Valley Salmon Team members will work with cooperating agencies to allow staff sufficient time for data analysis, interpretation, and reporting in venues such as this *Newsletter*, agency reports and peer-reviewed literature. The ultimate success of these efforts will depend on how well individuals, agencies, and stakeholders work together to understand and manage Central Valley salmonid stocks.

Low Striped Bass Index for 1996

Lee W. Miller and Stephen F. Foss, Department of Fish and Game

The summer tow-net survey measures an index of striped bass index abundance when the population mean size is 38mm. In 1996, the index was 2.1, the lowest since DFG began measuring the index in 1959. The previous low index was 4.3 in 1990, a drought year (Figure 1). The 1996 index is lower than expected based on the high mean April-July delta outflow of 50,000 cfs in 1996 (Figure 2). If this looks familiar, it is because this year was much like 1995, when we reported a similar unusually low young bass index for the water year type (Foss and Miller 1996). This article explores three possible causes of the lower-than-expected index: a mid-spawning-season storm causing either high mortality or sampling bias; low food availability; and low egg production.

A storm in mid-May, after spawning had commenced, increased outflow and decreased water temperature and may have pushed young striped bass downstream, where they were poorly sampled by the tow-net. The temperature drop (Figure 3) probably interrupted spawning and curtailed recruitment. This was reflected in decreased young striped bass density in the fourth 20mm survey (Figure 4), which is conducted twice a month to examine the distribution and density of larval and post-larval fish. (For more information, see Bay-Delta Home Page; http://www.delta.dfg.ca.gov). Mortality of striped bass may have exceeded normal levels, although it is difficult to ascertain if there was a population effect.

Shift of the population distribution downstream, where sampling effort is limited, also may have contributed to the lower density. Striped bass distribution shifted downstream between 20mm surveys 3 (early May) and survey 5 (early June), but after the storm the distribution was similar to what it was previously except for the increase in the Napa River and Carquinez Strait (Figure 5). In August or September, striped bass were not caught in San Pablo Bay or Carquinez Strait in either the tow-net survey or the fall midwater trawl survey, which samples 29 sites in the area. Three striped bass were caught in the Napa River in August. The September midwater trawl abundance index was 56, the lowest monthly index of record, corroborating the low tow-net index. The range of September midwater trawl abundance index before 1996 is 106-12,111. We conclude that the tow-net index was not biased by under-sampling downstream areas.

To evaluate the hypothesis that low food supply caused the low tow-net survey striped bass index, we examined the density of zooplankton available to young striped bass during May and June and found that zooplankton was not markedly lower in 1996 relative to other years (Figure 6). Density of mysids, *Neomysis* and *Acanthomysis*, in 1996 was high relative to recent years, although their density has been lower than it was before 1990. Since food supply has not been the apparent cause of low abundance in other recent years, (for example, the 1993 index was 23.4), it is unlikely the cause of the low abundance in 1996.

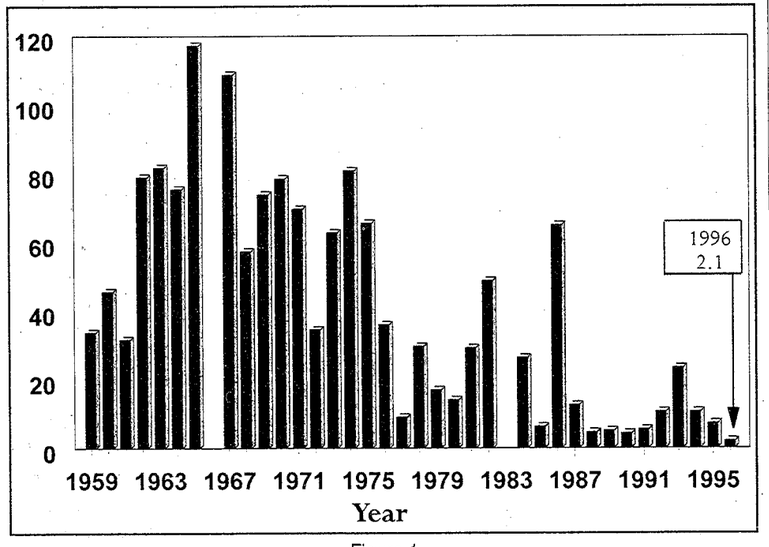

Figure 1
ANNUAL ABUNDANCE INDICES FOR STRIPED BASS WHEN THE MEAN SIZE OF THE TOW-NET SURVEY CATCH IS 38mm

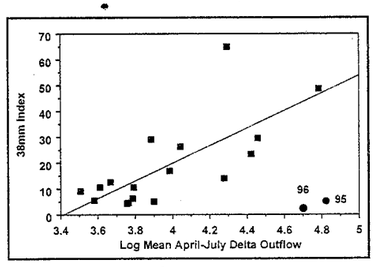

Figure 2
RELATIONSHIP OF THE 38mm STRIPED BASS ABUNDANCE INDEX TO LOG_{10} OF MEAN APRIL-JULY DELTA OUTFLOW SINCE 1977 (EXCEPT 1983)